2021

PROJECT CATALYST

Case Study

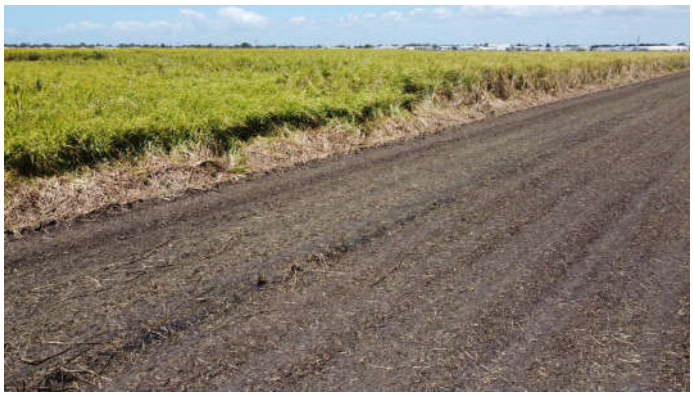
EM Mapping to Support Implementing Precision Farm Management & Implement Irrigation Scheduling Tools

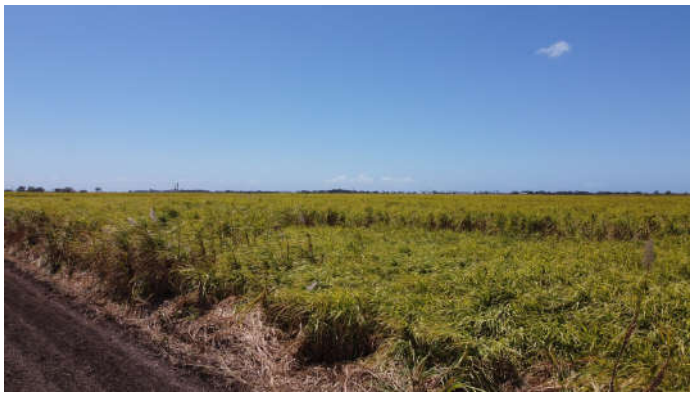
LANDHOLDER	Anonymous
LOCATION	Barratta Catchment
CATCHMENT	Burdekin
RAINFALL	984 mm
PROPERTY SIZE	123 ha
ON-GROUND PROVIDER	Farmacist-Burdekin

Project Catalyst is a grower led, sugar cane innovation and adoption project that explores, develops and validates farm management practice change to improve the enduring water quality of the Great Barrier Reef.

BROADER ADOPTION VALIDATION & GROWER SUPPORT

Founded in 2009, the project operates in the Mackay Whitsunday, Burdekin and Wet Tropic regions to deliver valued practice change outcomes and develop methods for industry adoption. Under the Broader Adoption and Grower Support program, professional on-ground service providers assist selected growers to adopt and validate appropriate change practices. Service providers continue to monitor implementation bene its and derived environmental performance improvements. Through targeted extension activities, the program seeks to accelerate the uptake and broader adoption of improved farming practices at local, regional and industry levels.





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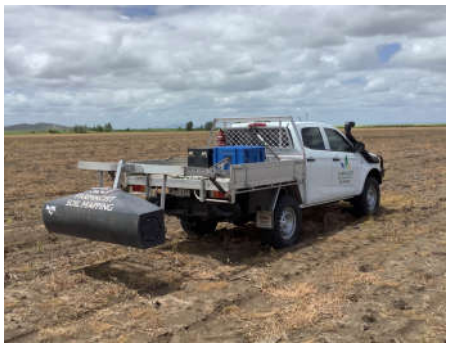
Goal

To use EM Mapping to develop management zones on farm that may be treated differently regarding ameliorates, fertiliser, irrigation or pesticide use.

Overview

EM Mapping is a precision mapping tool used to assess different soil conditions. Growers are able to use EM maps and the relative data to manage certain areas of their paddocks differently in regards to the application of ameliorants (lime/gypsum, mill mud/ash), fertiliser, irrigation and other inputs. When the map is ground truthed using soil samples, it can provide the grower with a better picture of what is happening in the soil profile, not just what is on the soil surface. Understanding constraints with-in field allows for more targeted applications of nutrients, pesticides and amelioration, but also aims to rectify yield variation across and with-in fields, leading to improved water quality.



Action

The blocks on this farm are subject to significant yield variability at harvest (see included photos). In order to pin point these areas of variability and and develop a targeted management platform, all fallow blocks were EM mapped.
The EM mapping provided an opportunity to garner greater insight into the potential issues in each zone. It is also data layer that can be used to develop short and long-term solutions.

Following the EM Mapping, Farmacist installed a G-dot in the high and low EC zones and collected growth measurements over two irrigations (3 weeks). This was to monitor the irrigation applications, lateral movement of water, paddock variability and daily plant growth in relation to soil condition and moisture availability.

Outcome

The grower was able to use the EM maps to gain a better understanding of the soil types and variation within individual paddocks and across the farm. In conjunction with the EM maps, GPS-referenced soil samples were taken to ground truth the maps and identify potential growth restraints.
Following the growth measurements, it was found that the heavy clay areas had better lateral penetration of irrigation water, but poor drainage. This was reflected by the G-dot readings as there was little change in soil moisture over the monitoring period. This adversely affected the cane growth in these areas. In the lower conductivity areas the soil was lighter in texture which reduced the water logging affects and saw improved cane growth. The grower is now able to irrigate to the majority of the paddock - by reducing moisture stress on most of the of the paddock, yield should improve.

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